The Cary Arboretum

of The New York Botanical Garden

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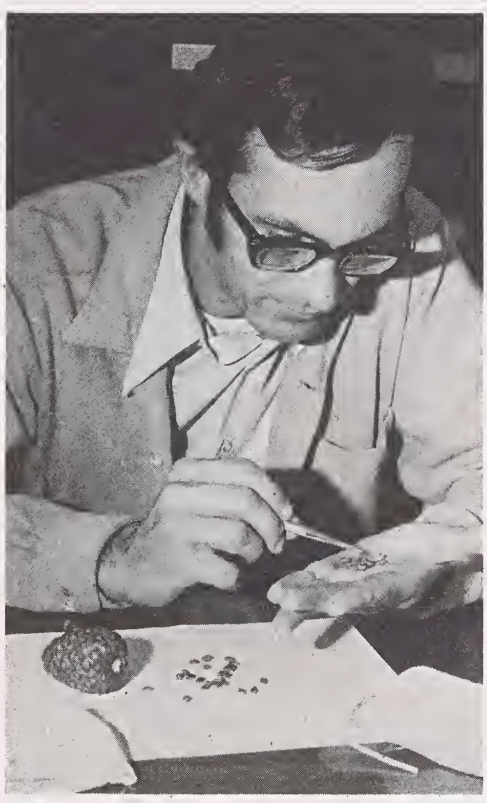
Botanical Exchange Between the U.S.A. and the U.S.S.R.

by Thomas S. Elias

Three botanists from the United States recently returned from a 22-day field trip to the Caucasus Mountains in the southwestern part of the Soviet Union. Dr. Thomas S. Elias, assistant director of the Cary Arboretum, led the group, which also consisted of Dr. Jane Bock, a specialist in subalpine and alpine vegetation, of the University of Colorado in Boulder, and Dr. Dale McNeal, a specialist in onions and their relatives, of the University of the Pacific in Stockton, California. This exchange, which focused on the conservation of wild species of flora and fauna, was part of a 1974 bilateral agreement covering cooperation in the field of environmental protection between the United States and the U.S.S.R. In August three botanists from the Soviet Union visited the Adirondack and Appalachian Mountains under Cary Arboretum auspices to observe how natural areas are protected and to collect seeds and plant specimens for study.

The diverse flora of the Caucasus Mountains provided rich collecting opportunities. The area contains many species of plants with relative species occurring in the eastern United States. In addition, the climatic conditions are similar to some regions in the United States, and, as a result, introductions from this region of the Soviet Union will probably thrive in both the eastern United States and the mountainous areas of the west. In total, the American botanists collected 400 different seed lots, 500 pressed and dried plant specimens and approximately 50 living plants. Some of these introductions may prove to be of great value because of their horticultural merit, suitability of use in urban areas, cold or disease resistance or for use in basic research programs.

The U.S. botanists began their visit at the Main Botanical Garden in Moscow, hub of a large network of botanical gardens throughout the Soviet Union. Along with their host Soviet scientist, the American trio then flew to Yerevan, the capital of the Republic of Armenia in the southwestern part of the Soviet Union, an area bordering both Turkey and Iran. Here, they visited the Botanical Institute and collected plant specimens in semidesert areas and in the dry, scrubby canyon forests and hillsides which lie east and west of the city. Their next base of operation was the Olympic Training Complex at Tsakhkadzor, which is located at a higher altitude in the Minor Caucasus Mountains. During a visit to Mt. Alibeck, the botanists studied and collected alpine and subalpine vegetation above the timber line. Lower on the mountain just below this timber line, at elevations of 4,800 to 5,000 feet, the group collected data in the beech-oak forest there. On south-facing slopes at the lower altitudes of 2,500 to 3,000 feet, the main vegetation is open juniper forest, which grows on dry, rocky hillsides. The botanists observed species of native wild tulips among this shrub vegetation.
In addition to the botanical aspects of the trip, the group visited several ancient monasteries and pagan temples, some dating back to 640 A.D.



Dr. Thomas Elias, assistant director of the Arboretum, inspects seeds he collected on his recent trip to Russia.

Leaving Armenia, the visitors then traveled by train to Tbilisi, the capital of Georgia, which lies in the Transcaucasus, about midway between the Major and Minor Caucasus ranges. Tours were made to the Lysynsky Institute of Forestry, the Ashkabad Forest Experimental Station and the Botanical Institute in Tbilisi, where a major program is currently underway to study and cultivate plant species that are endangered or threatened. An overnight train then took the delegation from Tbilisi to Batumi, a major port city on the Black Sea, only 15 kilometers from Turkey. Here in the sub-tropical climate, vast plantations of citrus and tea flourish, and a visit to a tea plantation and factory was included in the itinerary. In the nearby mountains, stands of native rhododendrons were observed under the large oriental beech trees which dominate this forest. The scientists then traveled north by car along the Black Sea coast, which has been transformed into a resort area for the Soviet people. In Gagra the group travelled high into the southern slopes of the Major Caucasus Mountains to visit one of the few remaining stands of coastal pine vegetation. Here they also saw vast expanses of threatened species of fall-flowering white crocus and pink colchicum. An endemic species of cyclamen was also seen on the rocky bluffs. At between 5,500 and 6,000 feet in elevation, they saw their first native stands of Nordman's fir, a magnificent tree reaching 120 feet in height. Numerous seeds and plant specimens were collected in this area.

(continued on page 4)

How To Protect Plants In Winter

by Alex Pearl
Plant Nursery Foreman

Three common winter enemies of outside plants are wind, low temperatures, and lack of water. How can your plants be protected against these frequently disastrous hazards? Let the experts in our Horticulture Department tell you:

WATER LOSS: Evergreens require more care during winter, since deciduous plants, which shed their leaves and become dormant during that season, do not suffer from water loss. However, because evergreens transpire moisture through their leaves during the coldest months, they must be protected.

Plants lose the greatest amount of water on windy, sunny days. To compound the problem, frozen ground cuts off the needed water supply absorbed by the root system, even though the evergreen continues to lose water by transpiration through the leaves. As leaf cells desiccate due to water loss, they will either turn dry and brown along the edges or die back completely.

How To Protect Against Water Loss:
1. Plant evergreens, particularly the broad-leafed varieties – such as *Rhododendron,* holly *(Ilex),* and mountain laurel *(Kalmia)* – in a shaded area that is shielded from the wind.
2. Hedging provides good wind protection, as do temporary shelters like snow fence, which both impedes wind and provides shade from direct sun.
3. Coating plants with an antidesiccant also protects against water loss. This chemical covers leaves with a transparent wax-like substance, which helps retard the moisture loss through the leaves.

John Olson wraps young tree trunk with burlap – one of several methods that will protect it from sun scald.

Dave Smith, left and John Olson, right, both Arboretum nursery workers, install snow fence around evergreens to protect it from water loss in winter.

SUN SCALD: This is a winter hazard that plagues young tree trunks, trees with thin bark, and newly transplanted trees. It results from the sharp climatic extremes produced when the sun's rays warm the tree trunk to 40-50 degrees, just before sunset, only to have the temperature plunge to below freezing during the night. The young trunk and limb tissues cannot cope with these contrasts. If damage occurs, bark will peel back, exposing long narrow dead areas.

How To Protect Your Plants From Sun Scald:
1. Wrap susceptible tree trunks with burlap strips, which should be left intact for one or two winters.
2. Do not prune trees with low limbs, for they shade the trunks from direct sun.

HEAVING: Heaving is the oscillation of soil between freezing and thawing, and it occurs during warm winter days and during early spring when there is no snow cover. Transplanted trees with root systems that are not well established are most susceptible. Heaving can push roots to the surface, exposing them to freezing and subsequent injury.

How To Protect Plants From Heaving:
1. Apply a mulch of wood chips, bark chips or leaves several inches thick. This will prevent the rapid temperature fluctuations which cause heaving. Even better, these mulches can and should be used throughout the year.
2. Mounding soil around the base of winter-tender plants like roses will serve as mulch and also can assist in developing new basal shoots in spring.
3. Stake newly planted trees with guy wire to protect roots against damage from heaving. (Note: Heaved lawns can be corrected by rolling them in spring before the first mowing.)

ICE AND SNOW FALLING OR COLLECTING ON PLANT LIMBS: These conditions frequently result in limb breakage. Boxwood *(Buxus),* yew *(Taxus)* and arborvitae *(Thuja)* are particularly vulnerable to such mishaps.

How To Protect Plants From Ice and Snow Damage:
1. Construct shelters with sturdy building materials that will serve as canopies for foundation plantings like yews.
2. An alternate to this box method is wrapping plants with burlap or other stripping to prevent snow from breaking small branches.
3. Pine, hemlock, spruce and fir also provide good protection for low-growing plants by repelling snow and wind.
(Note: If snow accumulates on branches, brush it off *before* it changes to ice.)

It is clear from the above brief notes that your plants can be effectively protected from winter hazards by a few simple and inexpensive expedients. And never were truer words spoken – "An ounce of prevention is worth a pound of cure!"

Cary Film Opens: Wins Award and Applause

Nearly 400 community leaders and Friends of the Cary Arboretum attended premiere showings of a documentary film about the Cary Arboretum at the Bennett College Auditorium on October 1st and 8th. The 25-minute color film, entitled "A Gift of Land," depicts the scientific, horticultural, environmental, and educational work now taking place at the Arboretum. It was enthusiastically received by the invited guests.

The Arboretum's land, a gift to the New York Botanical Garden from the Mary Flagler Cary Trust, was portrayed against a background of beautifully appropriate music, as its colors, vegetation, and animal population change with the cycle of the seasons.

Audiences watched a wildflower in the early morning light, a fawn feeding in meadow grass, a hawk circling over the Canoe Hills, and seedlings burgeoning in the special environment of an experimental greenhouse. They also saw and heard the Arboretum's young team of professionals at work – for example, an environmental expert studying the effects of hydroelectric development in Guatemala; a mycologist examining wood decay caused by fungi; a geneticist trying to breed disease resistant elm trees; and a botanist tracking how insects affect the life cycle of plants.

In other scenes, an architect's pencil traces plans for the Arboretum's solar-heated headquarters building, which is now under construction; horticulturists map out how plant collections will be distributed throughout the 2,000 acres; a wildlife expert works with construction crews to preserve animal and plant populations on the right-of-way of a high-voltage power line; and the educational director introduces a group of children to a denizen of the Canoe Hills – a snake!

Dr. Howard S. Irwin, president of the New York Botanical Garden and director of the Arboretum, eloquently defines the purpose of the Arboretum in the film's closing statement: "The commitment of the Arboretum is to make the fullest possible use of the diversity of conditions we have here for the benefit of mankind . . . to conduct botanical and environmental research and to translate the results of that research in ways that have meaning for the lives of people."

The film, which already has won an award from the San Francisco International Film Festival, was produced for the Arboretum by Vision Associates of New York City, with Ann Eisner as writer and director and Jon Fauer as director of photography. It is available for showing by local organizations, without charge. Arrangements can be made by writing the Public Affairs Department, Cary Arboretum, Box AB, Millbrook, New York 12545, or by calling 914-677-5071.

Holden Arboretum Trustees Visit Cary

Trustees and Board members of the 3,000-acre Holden Arboretum in Mentor, Ohio, recently travelled to Millbrook to tour the Cary Arboretum. For the seven enthusiastic visitors and their wives and/or husbands, the trip on October 1st was "a dream come true."

Seven years ago the Holden Trustees asked specialists at New York's Columbia University to research and define for them the role and purposes of an arboretum so these guidelines could be applied to their own organizations. Due to economic factors at the time, however, the Holden Board was unable to adopt the exciting proposal, though the Cary Arboretum was just about to be born. When, in 1971, Dr. Howard Irwin, president of the New York Botanical Garden, submitted to the Cary Trustees his concept of what our Arboretum should be, he included many of Columbia University's proposals in his document – particularly the unique concept of combining basic research with practical projects, and applying plant science to solve current environmental problems.

The Holden Trustees saw many of these ideas being carried out here. Through us, they also saw a 2,000-acre woodland in the process of evolving into a modern arboretum. No wonder they left Millbrook at the end of an exhausting, albeit fact-filled and activity-crammed day, full of renewed optimism that their 3,000 acres also can be developed along the lines already in use in the heart of Dutchess County.

Bob Hebb, staff horticulturist, points out some interesting aspects of the new lath house to our Holden Arboretum visitors. The lath house, constructed with treated wood, provides shade for young plants.

Dr. Tillman Lectures In England

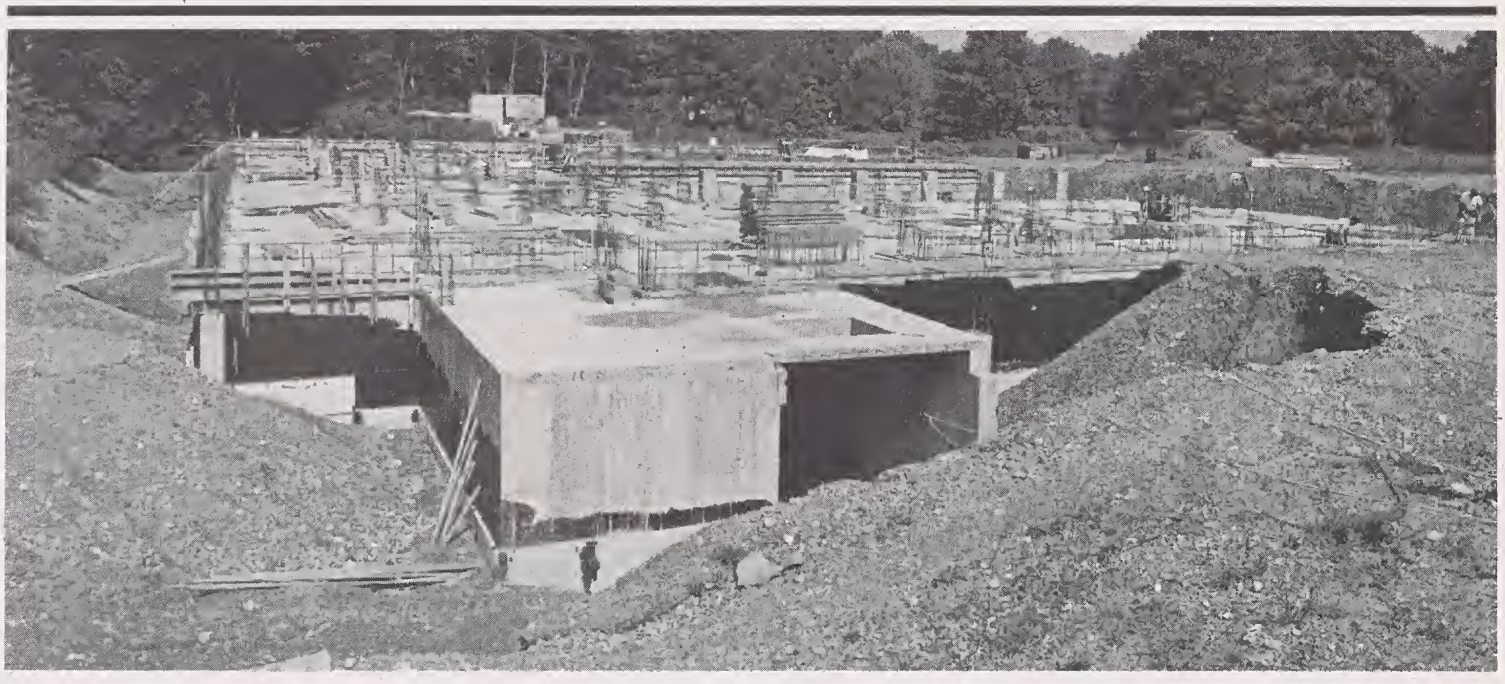
Dr. Robert (Gus) Tillman, Arboretum wildlife biologist, recently lectured at the Royal Geographic Society in London, England. The topic was the ecological impact of development in the vast Amazon area in South America.

His primary concern in the talk was to outline long-term and ecologically sound recommendations for economic development in the Amazon. Following the one-hour lecture, Dr. Tillman answered questions from a selected panel of scientists.

Botanical Exchange *(continued from page 1)*

Leaving Georgia, the group flew to Mineral'nye vodi – literally translated, "Mineral Water" – and then by microbus to the Northern Preserve and Dombai. Dombai lies high on the northern slopes of the Major Caucasus, where snowfalls average an impressive 12 feet per year. Here seeds were collected of the rare *Rhododendron caucasicum* and *Rhododendron luteum*. Plant collecting trips were then made into fir forests, subalpine meadows, birch forests and to the Alibeck glacier, one of the largest accessible glaciers in the Caucasus Mountains. An interesting aspect of the trip was a visit to a ginseng plantation. This rare plant is much sought after for medicinal use, and a successful research program directed at its cultivation has been underway for 17 years in the Northern Preserve.

Upon their return to Moscow, the American trio met with their Soviet counterparts to evaluate the exchange field trips. Both groups were strongly in favor of continuing the programs, and plans were made for a second exchange during 1977. This will then be followed by a series of exchanges over the next decade. Each year groups of scientists will visit different regions in both the United States and the Soviet Union, studying and collecting plants for research projects. All participants in this program, of course, hope their joint efforts will lead to better understanding and cooperation, and will help to promote peaceful exchanges of all kinds between the two countries.



Construction Progress *The Arboretum's Research and Administration Building photographed in mid-September, looking North from service entrance area. Foundation work and floor for second storey have been poured. Framing is scheduled to begin soon. Trees in background are being carefully saved.*

THE CARY ARBORETUM
of
THE NEW YORK
BOTANICAL GARDEN

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